FieldSmart Fiber Distribution System (FDS)

Installation Manual

Patch Panels
Optical Component Chassis (OCC)
Miscellaneous

CLEARFIELD
Ingenuity in Passive Connectivity
5480 Nathan Lane
Plymouth, MN 55442

Part #: 008830
Rev: C
Updated: 5.2011

Direct: 763.476.6866
National: 800.422.2537
www.**Clearfield**Connection.com
techsupport@clfd.net

CLEARFIELD
Ingenuity in Passive Connectivity

Table of Contents

Technical Support

Clearfield, Inc. can be contacted for any issues that arise with the supplied product.

If you need to return the supplied product, you must contact the Clearfield, Inc. Customer Service Department to request a Returned Materials Authorization (RMA) number.

Clearfield, Inc.
5480 Nathan Lane
Plymouth, MN 55442

Toll Free:	800.422.2537
Phone:	763.476.6866
Fax:	763.475.8457
Customer Support:	sales@clfd.net
Technical Support:	techsupport@clfd.net

Introduction

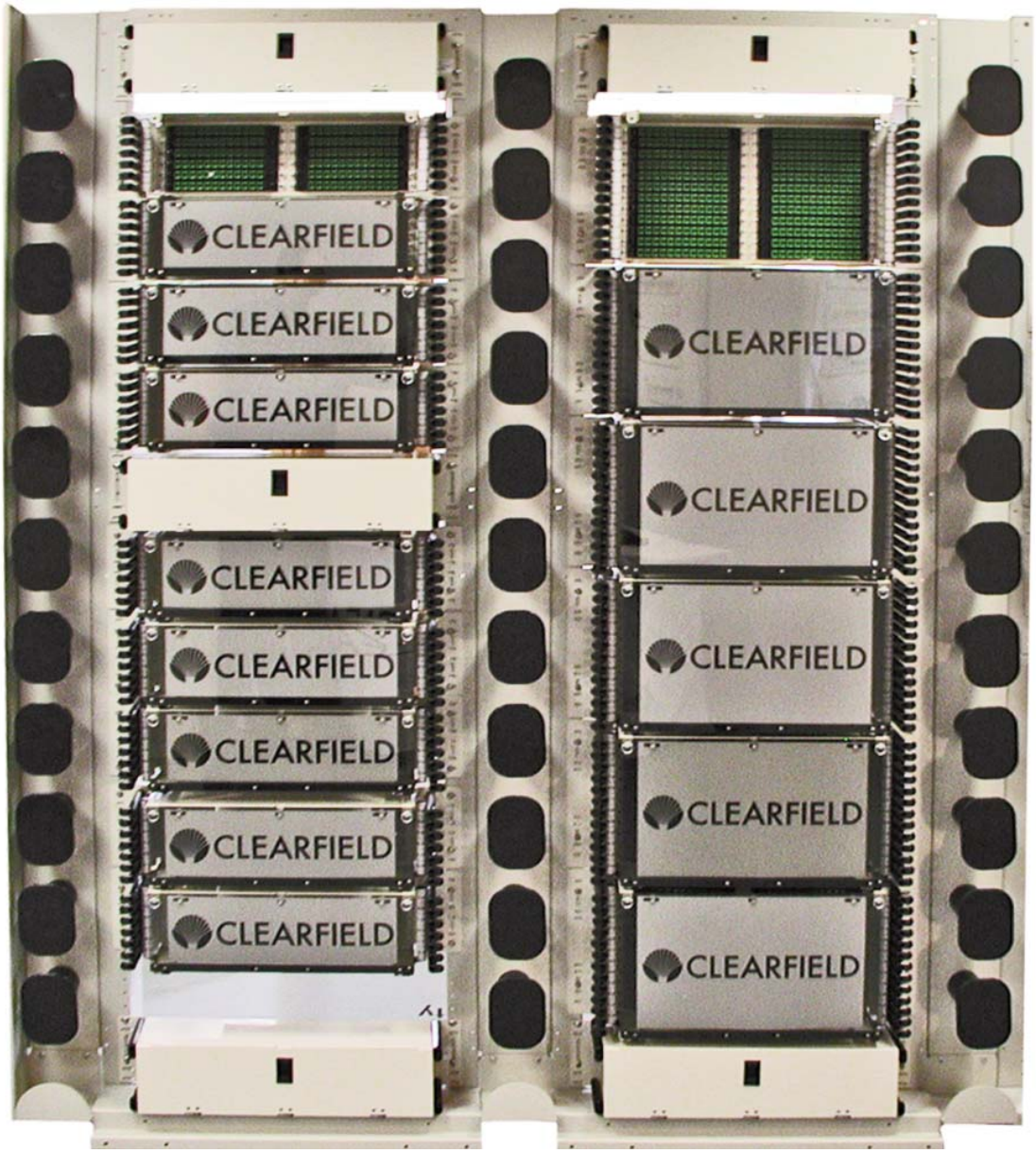
The Clearfield FieldSmart Fiber Distribution System panels and frames are ideally suited for high-density broadband and enterprise connectivity applications. The FieldSmart product family is made up of termination panels, frames and accessories. The panel line is ruggedly constructed with high quality components reducing the risk of post installation damage, while lowering the maintenance cost and enhancing the life of the system.

Proprietary Notice
About FieldSmart Product Line Application

Its purpose is to provide the user with adequately detailed documentation to efficiently install the equipment supplied. Every effort has been made to keep the information contained in this document current and accurate as of the date of publication or revision. However, no guarantee is given or implied that the document is error free or that it is accurate with regard to any specification.

FieldSmart Fiber Distribution System (FDS)

FieldSmart Panels & Frames



FieldSmart Panel Overview

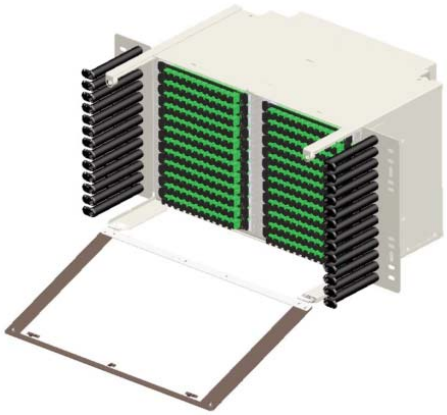
1. Removable 12 packs
2. Sliding cover
3. Optional rear mount brackets
4. Clearview fiber management cassette
5. Cover with distribution card

NOTE: Rear mounting brackets are best utilized when the congestion of the intended rack or bulk of the cable exiting the panel prevents the user from inserting the panel from the front of the frame.

24 Port Panel

72 Port Panel

144 Port Panel



288 Port Panel

FieldSmart Panel Optical Component Chassis Installation

Remove all packaging material and inspect product for damage. Determine if the panel will be loaded from the front or the rear of the frame.

Rear Mounting Instructions

Install brackets on both sides of the panel as shown using the screws included for each bracket.

Install the panel into the frame using at least two of the enclosed 12-24 screws on each side.

NOTE: To ensure the panel is centered in the frame, install at least one screw in a vertical slot on the bracket. To ensure the panel is installed level in the frame, install a screw in like horizontal slots on both brackets.

After mounting the panel into the frame, install the fiber management brackets on the front of the frame using the enclosed 12-24 screws so that the brackets line up with the profile of the panel. Install screws through both the vertical and horizontal slots. The brackets will be touching the panel if installed properly.

Rear Load Bracket Installation

Rear Load Panel Installation

FieldSmart Panel Installation

Front Mounting Instructions

If front mounting is desired, attach the front mounting brackets to both sides of the panel as shown using the screws included for each bracket.

Install the panel into the frame.

NOTE: Use caution when installing the panel to avoid damaging the pigtail(s) exiting the rear of the panel—pigtail on patch only panels. Rear mount brackets are not required in the front mount applications.

NOTE: To ensure the panel is centered in the frame, install at least one screw in a vertical slot on the bracket. To ensure the panel is installed level in the frame, install a screw in like horizontal slots on both brackets.

Front Load Bracket Installation

Panel Installation

FieldSmart Panel Installation

Installation of Designation Rods

Locate Designation Rods for installation.

Position the rod with the labels for the first ports (lower numbers) onto the end of the arms on the left side of the panel ensuring that the rod is outside of the panel.

Slide the rod onto the arms of the panel evenly to the lock position.

Note: Optical Components Chassis verticle rods will not have a numbered label.

Desi Rods

Desi Rod Installation on the Left End of the Panel Arms

Left Desi Rod in Final Position

FieldSmart Panel Installation

Installation of Designation Rods

Position the rod with the labels for the last ports (higher numbers) onto the end of the arms on the right side of the panel ensuring that the rod is outside of the panel.

Slide the rod onto the arms of the panel evenly to the lock position.

Starting Desi Rod Installation on the Right End of the Panel Arms

Right Desi Rod in Final Position

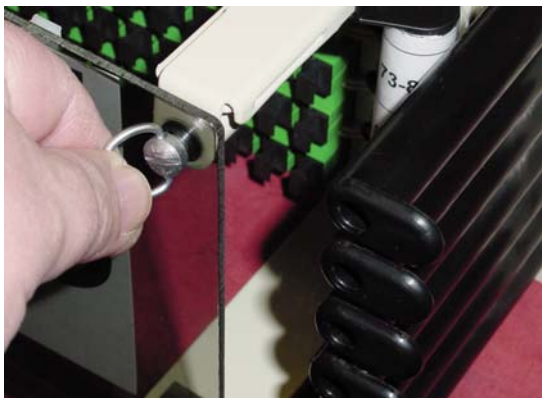
FieldSmart Panel Installation

FieldSmart Access

In order to access the adapters on the front of the panel, lower the lexan door by turning the quarter turn handles located in the upper corners of the lexan door. The door can be removed and set aside by deflecting the spring clip up out of the way of the right hinge and sliding the lexan door to the right.

Open the sliding top cover by pushing firmly against the center of the cover and sliding it towards the rear of the panel. This will allow unrestricted access to the adapters at the top of the panel.

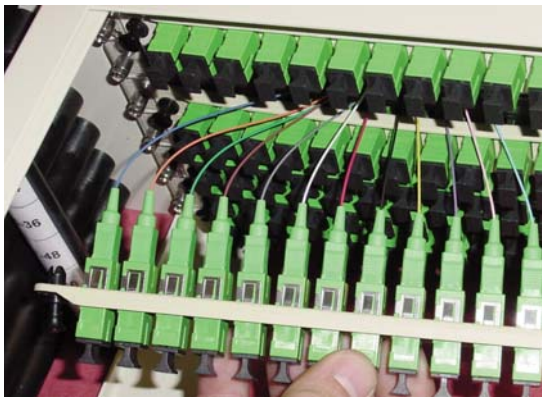
To remove each 12 pack, pull the push-pull plunger on each side of the adapter plate and carefully pull the adapter plate out. You will have approximately 4-6 inches of travel and access to the rear of the adapter. NOTE: Use caution when removing the adapter plate so fibers are not damaged.



Lexan Door Quarter Turn

Spring Clip on the Right Hinge

Sliding Top Cover Pushed to the Rear

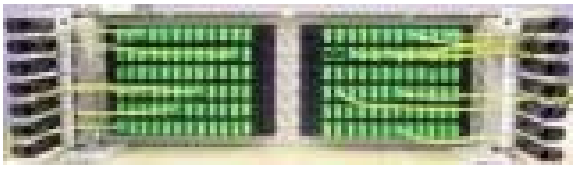


Adapter Plate Being Accessed

FieldSmart Panel Installation

FieldSmart Fiber Jumper Routing

Each 12 pack on the front of the fiber panel has a corresponding radius finger at the outer edge of the panel. Route fibers from the adapter over the correct finger and then to the intended destination.



Adapters/Finger Routing

FieldSmart Splicing

Install panel into desired location. Strip off 13 feet of outer jacket and mark the buffer tubes 10 feet from the outer jacket.

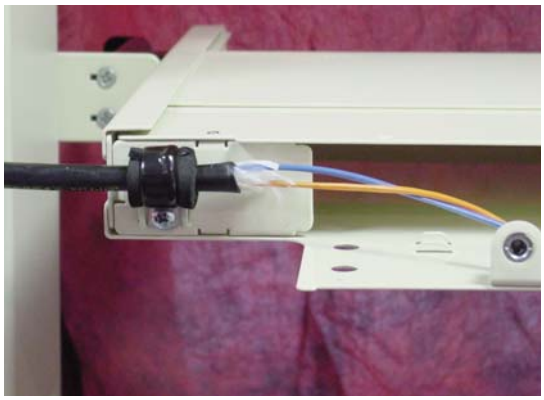
Clamping the Incoming Cable

Locate the green clamp shells or the P-clip and corresponding mounting screws from the ship-along hardware.

Determine which clamp or P-clip best fits the cable to be installed.

Using P-clip

Use the included mounting screw to fasten the P-clip and the cable to the panel, placing the P-clip between the two bridge lances to prevent the P-clip from rotating. The cable should be mounted so that the breakout is slightly beyond the end of the P-clip.



P-clip Around a Cable

Using Clamp Shells

The clamp shells are used in same-size pairs. Avoid using a clamp that is too small and does not easily close around the cable. Use the next larger clamp and grommet tape.

Green Clamp Shell

Adhere a strip of foam tape (included in the ship-along hardware) to at least one side of the clamp.

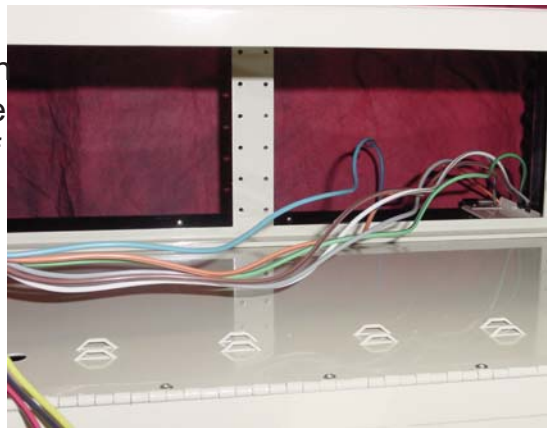
Use the included mounting screws to fasten the clamp shells and cable to the appropriate cable bracket. The cable should be mounted so that the breakout is slightly beyond the end of the clamp.

Green Clamp Around a Cable

FieldSmart Fiber Splicing

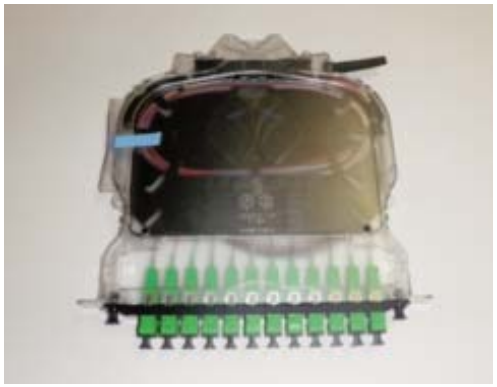
Routing Incoming Buffer Tubes

Feed the buffer tubes for all ports on the left side of the panel through the front of the panel to the right side of the bulkhead when looking from the rear of the panel.



Buffer Tubes Crossing to Front-Right of Panel

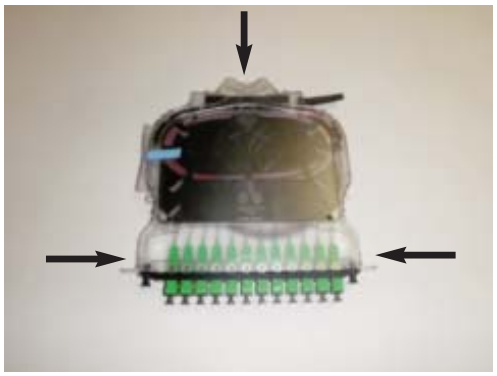
The Clearview cassette comes delivered with the 900 micron fiber routed and preloaded into adapters at the front of the cassette and a buffer tube protection boot exiting on the left of the rear of the cassette.

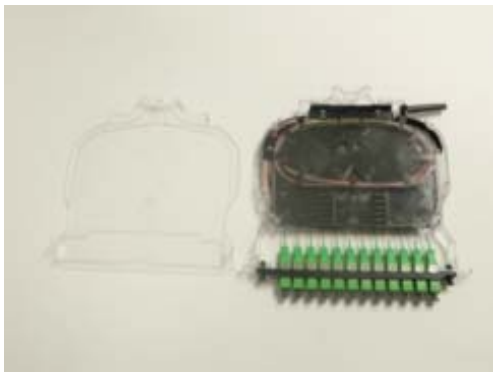


FieldSmart Fiber Splicing

The mounting screws for the cassette are enclosed in a small bag and taped to the side of the cassette. Remove them and set aside for future use.

Remove the cover by pressing the tabs on the sides and rear of the cassette and lifting it from the base.

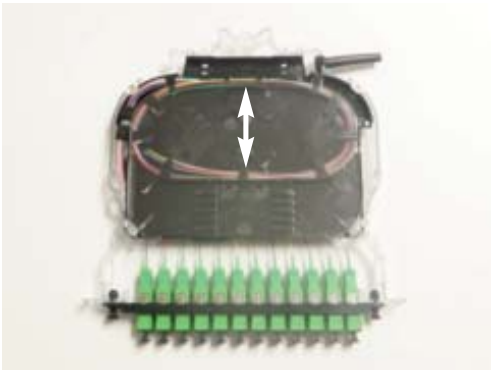




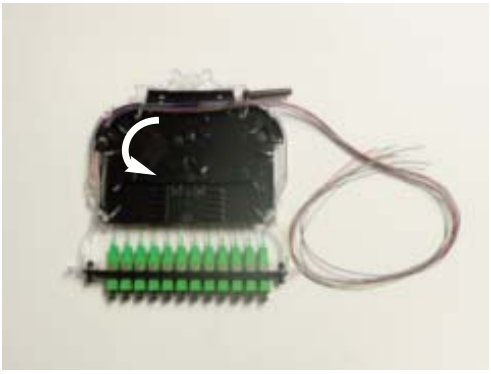
The splice tray cover can be removed by lifting up on the two tabs in the corners of the cover, then moving it slightly forward.

FieldSmart Fiber Splicing

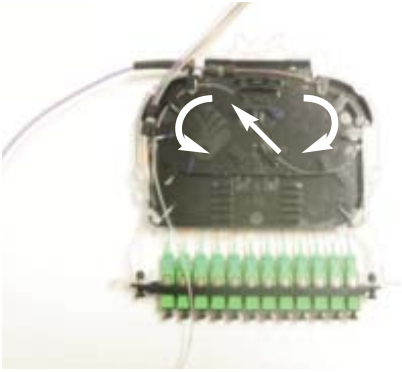
The preloaded spliceable 900 um pigtails come pre stored in the outer raceway of the splice tray.



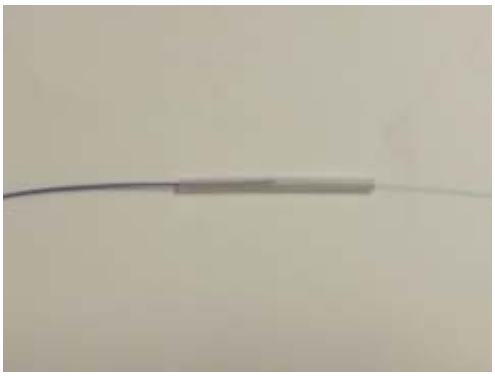
Based on your application, insert the boot into the cassette and tie the buffertube to the cassette with the cable exiting the appropriate direction. If entering from the right hand side of the cassette the 250 um fiber will naturally flow into the logo side of the splice tray for storage after splicing.



If entering the cassette from the left hand side of the cassette you will be required to do a small redirect “S” in the splice tray to translate the 250 um fiber into the logo side of the splicing tray for storage after splicing.



Individually splice the 250 um fibers to the 900 um fibers.



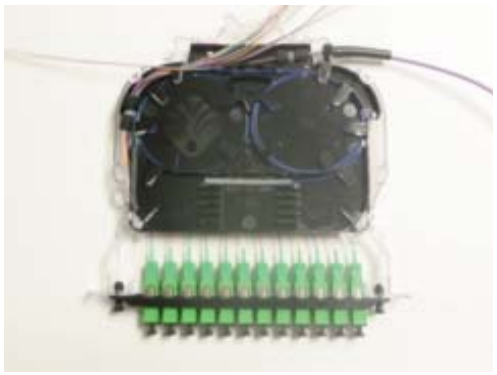
FieldSmart Fiber Splicing

If a 3M brand fiber lock splice sleeve is to be used , the small supports in the splice tray will need to be removed with a side cutter or utility knife.

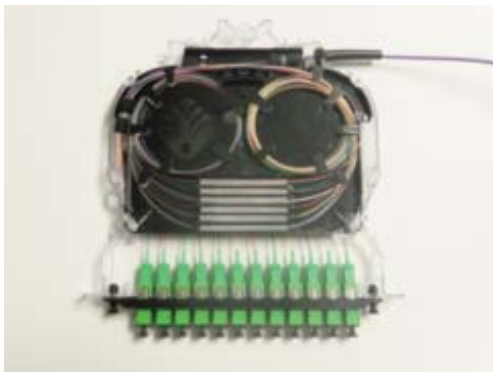
A bead of silicone can then be applied to the center of the splice sleave holder. This silicone is necessary for 40 mm splice sleeves and the fiber loc brand splice sleeve.

Note, silicone is not necessary for 60mm splice sleeves

The spliced fiber can then be stored in the splice tray as shown.

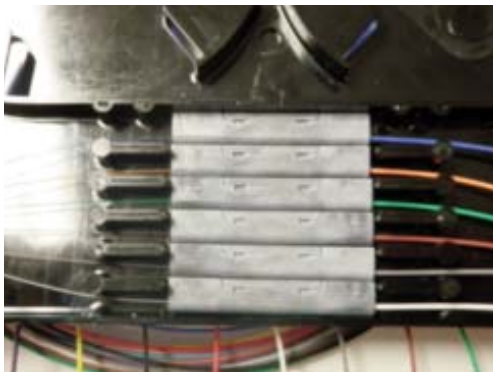


Continue to splice the fibers and store the slack until the cassette is fully spliced. The sleeves will need to be double stacked in order to accommodate all 12 splices

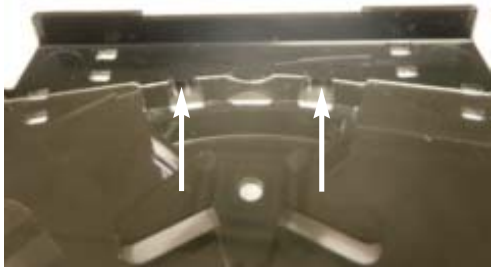


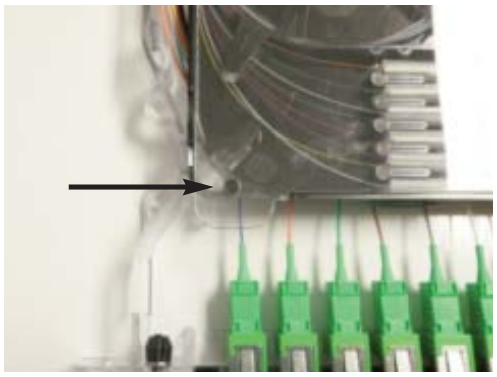
FieldSmart Fiber Splicing

The 3M fiber loc sleeves will lay on their sided in the storage area



Replace the splice tray cover by inserting the back edge under the holding tabs and pressing the holes in the cover until fully seated on the pressure fit posts at the front of the tray.

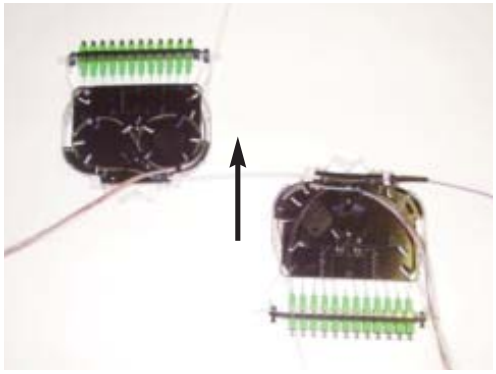




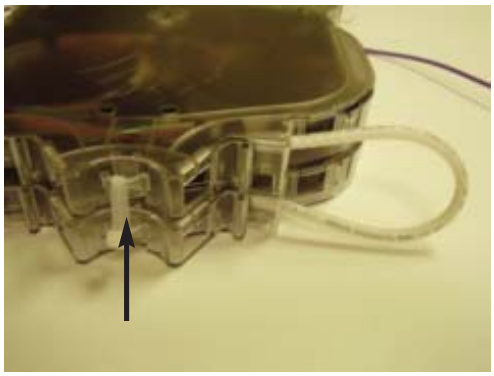
Replace the top cover assuring the three tabs are fully latched The cassette is ready to be mounted into the appropriate chassis using the provided screws.

FieldSmart Fiber Splicing

If a 24 fiber buffer tube is to be used, a 8-10” piece of tubing can be used to connect two cassettes as shown. This allows the first 12 fibers to be spliced in the first cassette and the second 12 to carry through the tube into the second cassette.



After you have finished splicing, you can then fold the cassettes onto each other and zip tie them together using the three provided loops.



Installing Spliced Cassettes

After splicing the the fibers into the cassettes, feed the buffer tubes back through the bulkhead and install the cassette into the bulkhead in the appropriate port location.

Cassettes Installed

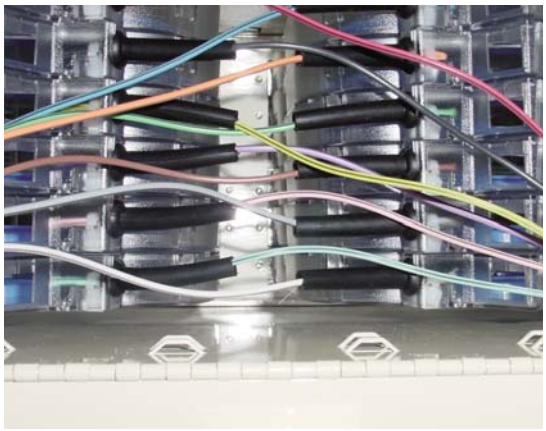
Feed the right side buffer tubes in order through the front of the panel starting at the top and alternating every other tube with the existing buffer tubes on the right.

NOTE: Buffer tubes from the right and left sides should be interwoven as shown.

Buffer Tubes Crossing to Front-Left of Panel

FieldSmart Fiber Splicing

Splice and install the cassettes for the left side of the panel in the same fashion as the right side until the panel is fully spliced in.

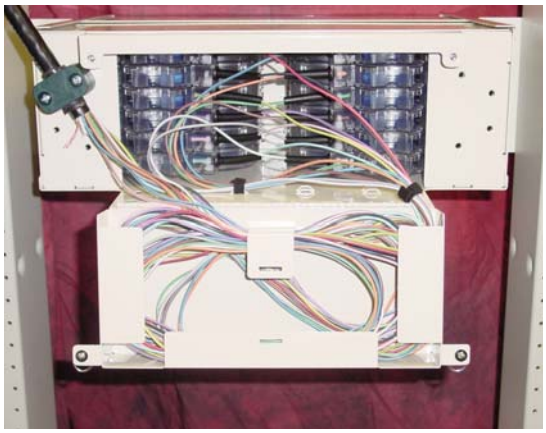


Installed Splice Cassettes

Storing Buffer Tube Slack

Coil the buffer tube slack in loops that will fit into the slack storage basket and be retained by the tabs as shown.

After the buffer tubes are coiled, use the included Velcro to secure the buffer tubes in the locations shown.



Buffer Tubes Coiled and Fastened

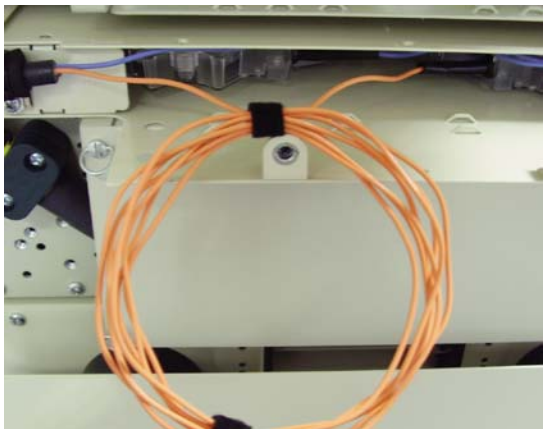
Carefully close and latch the slack storage basket, paying attention to not damage the buffer tubes.

Basket Closed

FieldSmart 1 RU Routing

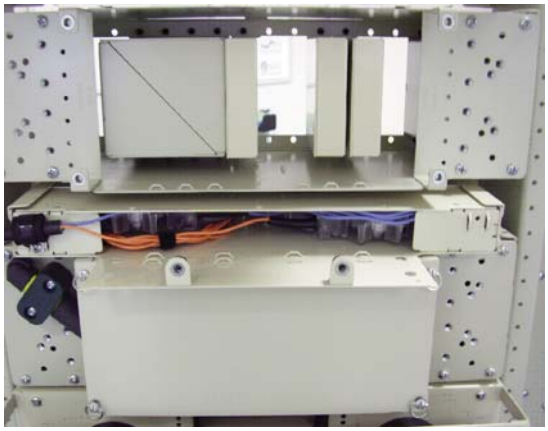
When using the 1 Ru panel, please use the following steps to store the buffer tube slack in the panel after splicing.

After splicing the cassettes and reinserting them into the bulkhead, start by coiling up the buffer tubes from each cassette into a coil—around 6-8" in diameter the coil can be secured with the provided Velcro.



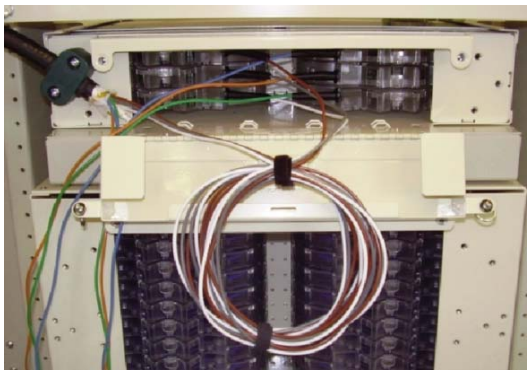
Velcro-secured coil

The buffer tubes can then be inserted—one above and one below the cassettes—in the panel.



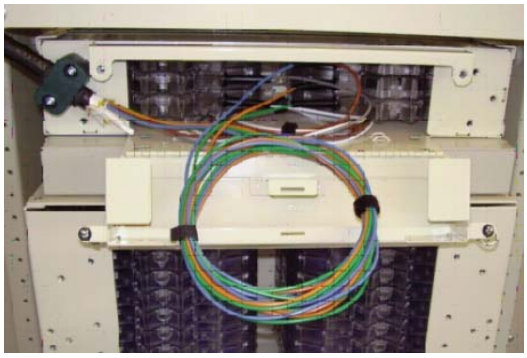
FieldSmart 2 RU Routing

If the cable to be stored in a 72 port, 2 rack unit panel has a stiffer buffer tube and will not easily store in the slack basket, please use the following steps to store the extra slack.

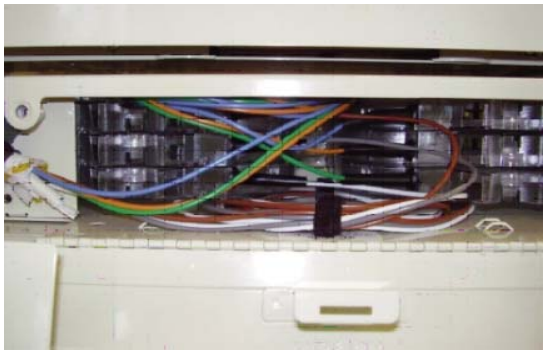


After splicing the cassettes and reinserting them into the bulkhead, start by coiling up the buffer tubes from one bank of cassettes into a coil around 6-8" in diameter. The coil can be secured with the provided Velcro.

Next, slide the coiled buffer tube under the cassettes in the panel. The coil may need to be flattened in order to slide under the cassettes.



Now, coil the remaining buffer tubes from the other bank of cassettes and secure with the provided Velcro.



Finally, store the second coil above the cassettes in the same fashion as the first coil.

Tie Panel

If using multifiber cable you can attach the cable to the rear of the panel in the same fashion as described on page 11.

If using jumpers, the cables can either be bundled and wrapped in foam tape to clamp to the back of the panel, or tied to the provided bridge lances.

Bundled Cables

Included in each tie panel assembly are self-adhesive foam separators and cable management clips.

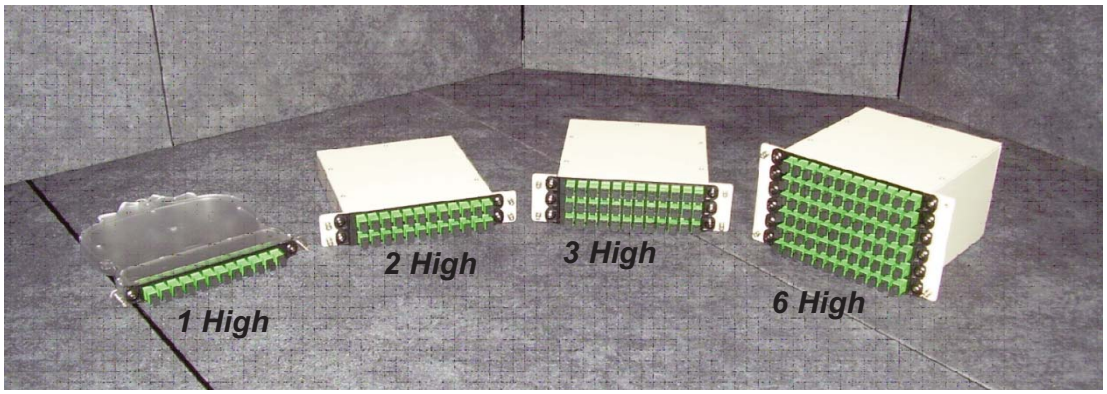
Foam Separators & Clips

These accessories can be used to help manage the cables in the interior of the panel. Shown is one example of routing a multifiber cable. Note: top is removed to show routing.

Foam & Clips in Use

FieldSmart Horizontal Modular Optical Components

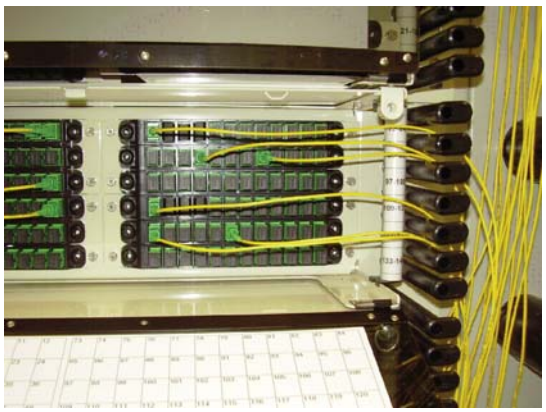
Horizontal Components



Fieldsmart Horizontal optical component cassettes are available in 4 sizes and can accommodate a variety of different splitter/wdm configurations

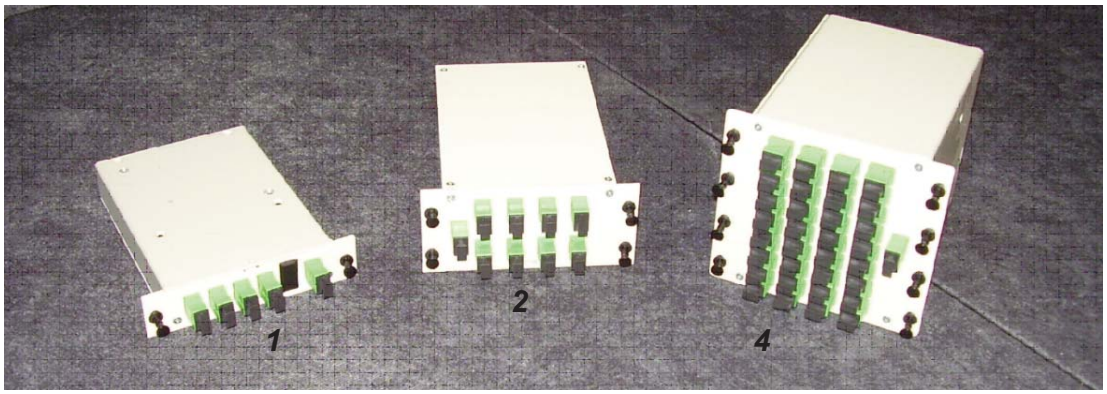
To install the cassettes, insert the cassette into the chassis and secure it using the captive fasteners. Be careful not to over-tighten.

Jumpers can then be routed either left or right out of the cassette and into the vertical cable management of the frame.

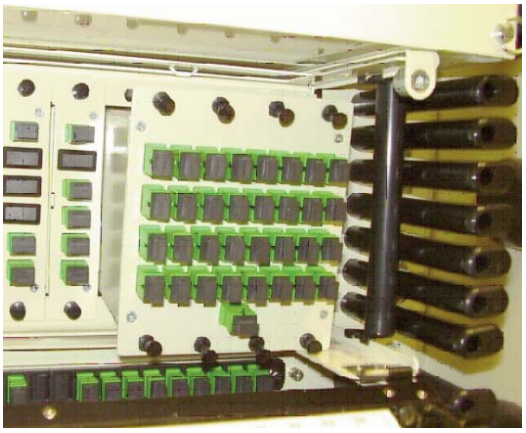


FieldSmart LGX Modular Optical Components

LGX Components

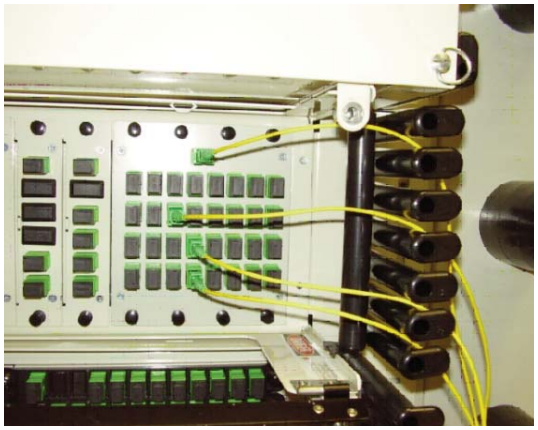


LGX compatible optical component cassettes are available in 3 sizes and can accommodate a variety of different splitter/wdm configurations.



To install the cassettes, pull the push pull grommet, out then insert the cassette into the chassis and finally push the grommet back in to secure the cassette in the chassis.

Jumpers can then be routed either left or right out of the cassette and into the vertical cable management of the frame.



6-Drawer Splice Deck Overview and Installation

1. Splice drawers
2. Open brackets
3. Latches
4. Splice tray
5. Bend limiters

NOTE: Splice Decks are only offered with open brackets.

Splice Deck – Mounting Panel into Frame

• The splice deck is installed by inserting the panel from the front of the frame and securing with the enclosed #12-24 screws (Fig. a).
NOTE: In order to assure the panel is centered in the frame install at least one screw in a vertical slot on the bracket. To assure the panel is installed level in the frame be sure to insert a screw in like horizontal slots of both brackets (Fig. b).

Fig. a

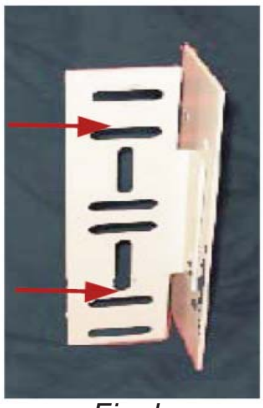


Fig. b

Splice Deck – Access

• To access the splicing drawers, first open and remove the door by pulling on the push-pull connectors (Fig. c) in each corner and lifting the door from the hinges. Set aside the door.

• Open a splicing drawer by pushing the both black locks toward the center of the drawer and pulling the drawer straight out (Fig. d).
NOTE: The drawer will not come completely out of the panel.

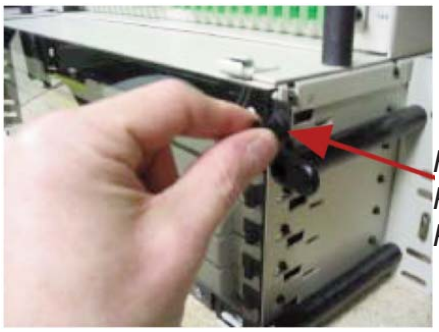


Fig. c
Push-Pull Plunger

Fig. d

6-Drawer Splice Deck Cable Routing

NOTE: The 12 fiber distribution pigtails that will be spliced into the splice deck should be routed in the rear of the frame (Fig. e).
NOTE: Pigtails are inserted into the drawers at time of installation, not tied into the drawers.

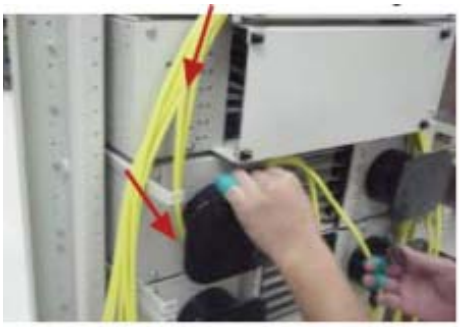


Fig. e

Tie pigtails to the back of the panel using the enclosed grommet tape and wax coated string. Route pairs of 12-fiber pigtails smoothly around the radius spool without crossing.

Ensure that the pigtails are NOT TIGHT around the radius spool when tying off. Tie the pairs of pig tails as shown (Fig. f) piggy backed vertically.

Fig. f

Splice Deck – Cable Routing in the Rear

• Tie off points with extra string located in drawer and back of panel (Fig. g).
• If patch panel and splice tray are purchased separately, leave extra string when tying down IFC tails. This string will be used later for tying down OSP subunits.

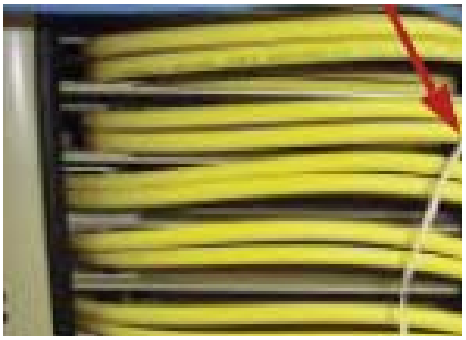


Fig. g

Splice Deck – Fiber Routing in the Drawers

NOTE: When routing into the drawer, assure the pigtails stay uncrossed as they pass through the slack take-up slide and enter the panel.
NOTE: Depending on your cable entry, the slack take-up slide can be reversed by disconnecting the spring and reconnecting it to the alternative anchor point on the opposite side of the drawer (Fig. 25). Orient the slack take-up slide BEFORE routing cable through it.

Fig. h

6-Drawer Splice Deck Cable Routing

• With a splice drawer fully opened, tie the two pigtails to the splice drawer. Pull the pigtails toward you and outward against the slack take-up-slide until the rivet in the slack take-up-slide aligns with the arrow on the slack take-up label (Fig. i). Maintaining the tension on the pigtails mark them where they intersect the tie-off point. Cut and apply the supplied grommet tape the pigtails at the mark. Apply tension the pigtails and tie them to the drawer (Fig. j). This will allow the spring to take up the slack in the drawer when it is closed. Leave approximately 6” of extra wax string for later tying of OSP subunits.

Fig. i

Fig. j

Splice Deck – Clamping the Incoming Cable
NOTE: The incoming OSP cable can be clamped either directly to the splice deck (Fig. k) or the frame itself (Fig. l) using the enclosed mounting hardware. For either method, use the following instructions.

• Remove the desired amount of outer jacket.
• Located the green clamp shells and corresponding mounting screws from the ship-along hardware.
• Determine which clamp best fits the cable to be installed. The clamp shells are used in the same size pairs. Avoid using a clamp that is too small and does not easily close around the cable. Use the next larger clamp and grommet tape.

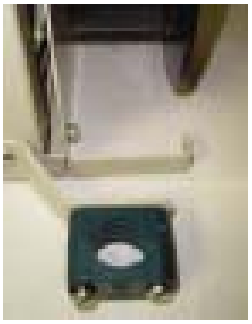


Fig. k

Fig. l

6-Drawer Splice Deck Cable Routing

• Adhere a strip of foam tape (included in the ship-along hardware) to at least one side of the clamp (Fig. j).
• Use the included mounting screws to fasten the clamp shells and cable.
to the appropriate cable bracket. The cable should be mounted so that the breakout is slightly beyond of the clamp (Fig. k).
• The OSP buffer tubes are then routed on top of the IFC tails and secured with the remaining wax string and grommet tape (Fig. l).
• IFC and loose tube slack should be routed in the same direction as seen in Fig. m.

Fig. j

Fig. k

Fig. l

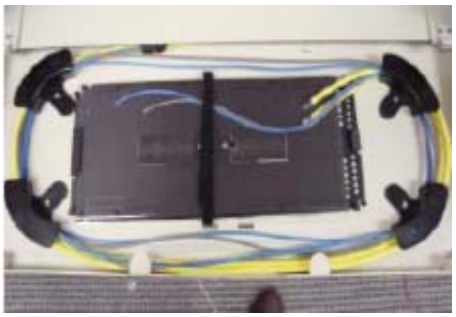
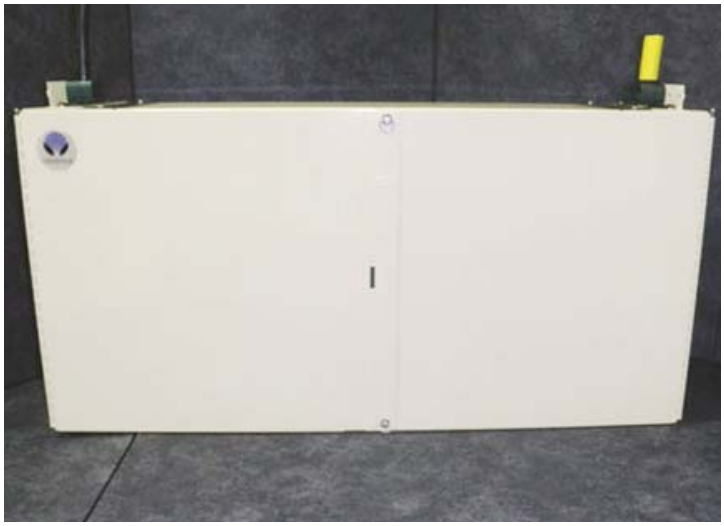


Fig. m

NOTE: All fiber should enter a splice deck and drawers from the same side to allow proper drawer operation.

• Strip the jacket off of both the IFC and OSP fibers.
• Clean the fibers.
• Splice the fibers.

FEC



The FieldSmart FEC is built on a modular platform scaling 288 HSF or 864 mass fusion (ribbon) fiber splices at a time. Multiple entry/exit points allow for multiple distribution and OSP fiber sheaths to enter into the FEC from top, bottom, or sidewalls transitioning from conduit, overhead fiber tray or raised flooring. A removable splice block, holding twelve 24-fiber splice trays, allows the user access and prep away from the cabinet. Intuitive buffer tube and subunit slack routing prevents cable tie-in's with a clockwise routing scheme to allowing quick and easy re-entry after initial deployment or to add additional capacity. The FEC can be ganged together, in modular fashion, allowing scalability up to 864 fiber splices and beyond if vertical real estate is available.

Each cable entrance plate will support cable diameters up to 1 inch. Lockable cupboard style doors allow for easy access with minimal swing clearance required for tight aisle clearances.

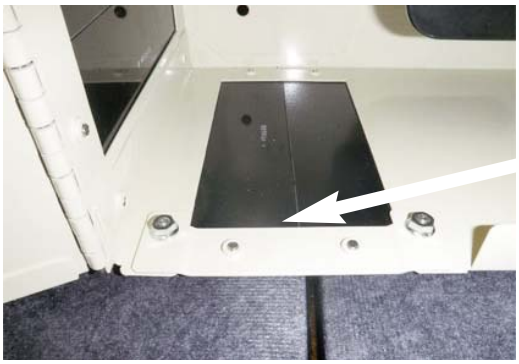
The cabinet is accessed by rotating the ¼ turn fasteners located on the front door of the cabinet.

The cabinet comes with 4 sheet metal brackets for cable mounting and 16 blank plastic plates. The cables can be installed with either the clamps on the outside of the cabinet or on with the clamps on the inside of the cabinet for extra security. Plugs are also included in the kit to fill the unused holes.

Cable clamp mounted on outside

Cable clamp mounted on inside

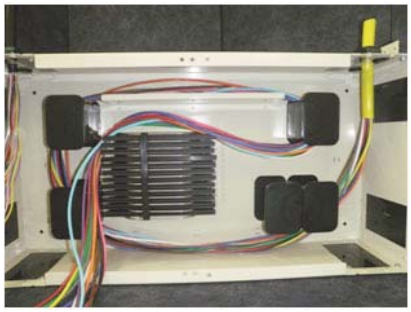
Note: Grommet tape included in the kit may need to be used to build up the cable size to get a better grip with the provided clamps.



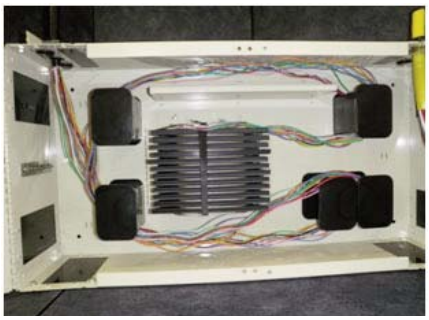
This plate is removable.

If the cables are to be carried from one cabinet into the next, then the supports blank plates and bracket plates will not need to be used between the two cabinets. There is a removable bracket on all of the top and bottom entrances that will allow you to lay cables in without having to cut them.

After choosing the entrance that will be used for your cables you will need to plan your cable route within the cabinet. All cables should eventually route in a clockwise direction. Depending on where you enter the box you may have to use the redirect spool in order to achieve a clockwise rotation.



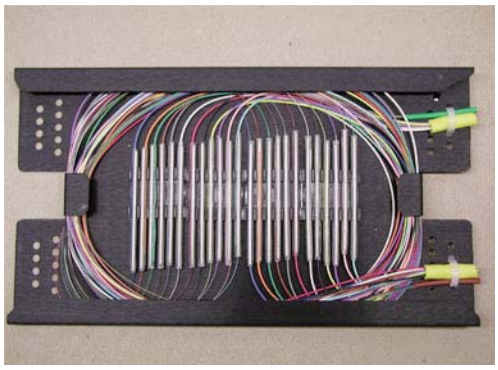
No redirect used



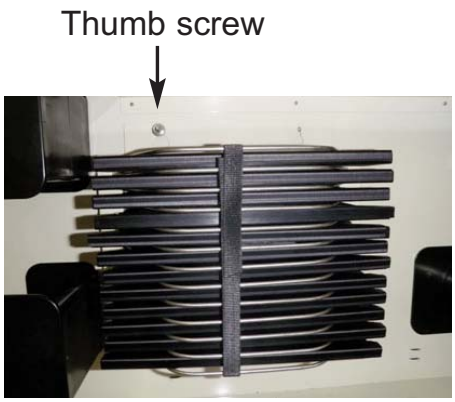
Redirect used.

After all cables are routing the correct direction and there is an adequate amount of slack in the cabinet, the cables tie down locations can be marked with a permanent marker.

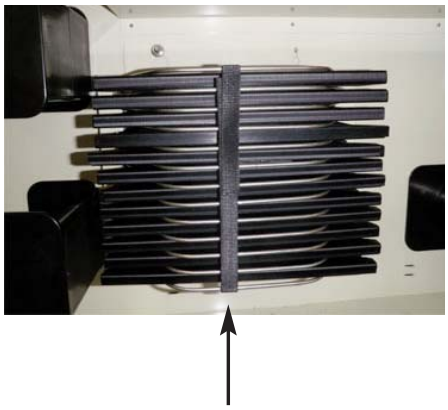
Each splice tray can hold either 24 single splices or 6 ribbon splices.



The entire block of splice trays can be removed for splicing by loosening the thumb screw in the top left corner and lifting the block of splice trays.



After splicing the splice trays can be secured into place using the included Velcro strap.



If a locking bar is used the bar is installed in the cabinet using the provided screws as shown.

Locking tab to the right

After the bar is installed and the doors closed, a lock can be inserted in the tab to secure the doors.